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PLATFORM 29

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COVER PHOTOGRAPH:

Electric loco No. 2 was a unique locomotive on the LYR. Number 1 was a very different design based on the underframe of the standard 2-4-2 tank engine and, being an experiment, it never saw any general service. No. 2 however saw 17 years of service at Clifton Power Station before being transferred to Scotland in LMS days (1933). It appears to have ended up at Derby Works in 1947 and presumably was cut up there. Both the loco and the wagons are featured fully in this edition. *Photograph courtesy NRM (HOR 2622)*

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Working with the Bury Electrics

J. A. HODSON

As is well known the line was electrified at 1200v D.C. but the trains themselves carried three different voltages, i.e. the line volts of 1200 D.C., 100v D.C. for control and auxiliary circuits such as lighting, "air conditioning" fans etc. supplied by a machine known as a rotary convertor motor generator set (in modern terms (M.G.), and 12v D.C. from batteries for the signal bell circuits and also points in the High Tension (H.T.) compartments into which maintenance staff could plug-in a (home-made) lead lamp. The batteries were charged when the set was in the depot for a day's maintenance, approximately every ten days.

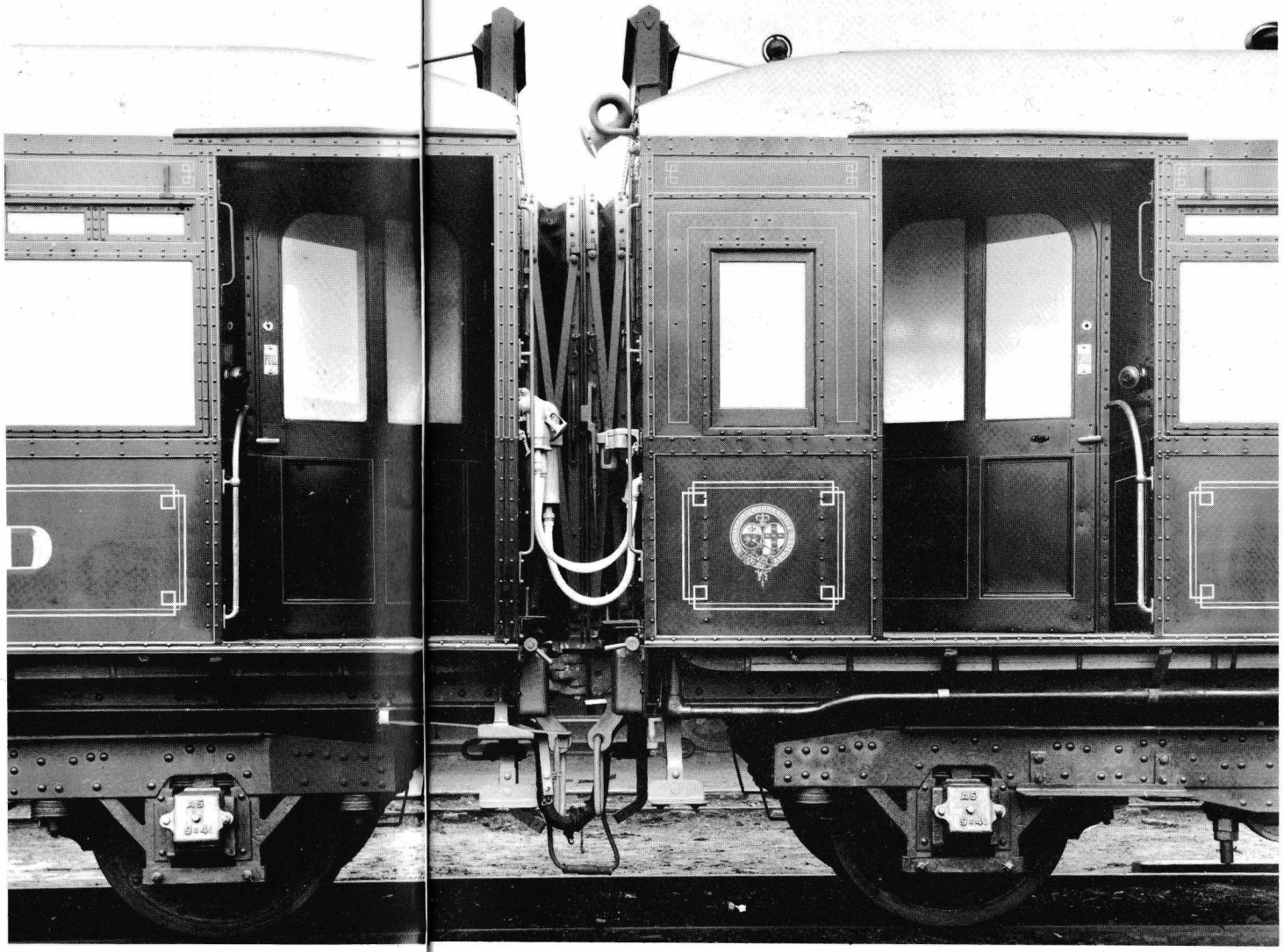
Traction Motors (T.M.) were 1200v, 200H.P. and if all twelve motors of a five-car set were working gave a total of 2400 H.P.—equivalent to a type 4 diesel loco, for a train weight of 220 tons. Motor coaches were 54 tons and Trailer coaches were 29 tons, both considerably heavier than their modern counterparts. T.M's. being 1200v could be isolated individually if a fault developed. Modern practice is to connect two motors of half line voltage permanently in series and if one develops a fault the pair have to be isolated losing a greater percentage of available H.P. The motors were of necessity large and when stripped for repair the carcase was stood on end by the crane for removal of field and interpole coils. This was accomplished by a fitter standing in the carcase and the overhead crane block (hook) being lowered into the carcase to lift out the heavy coils.

Motor coach 28535 and trailer 28708 outside Bury carriage shops in September 1958. Photograph by F. W. Shuttleworth (No. AW 86)

MASTER CONTROLLER: This was obviously located in the driving-cab and consisted of two parts, i.e. the forward and reverse drum and the 'speed' drum. The F.R. drum had five positions, being OFF and one manual and one automatic acceleration (auto) in each of the F and R positions. The speed drum had four main positions divided into nine notches, the main positions being 'Shunt' (very low speed), Series, Parallel, and Weak Field. Normally the controller would be used in auto, but manual was useful with damp/greasy rail conditions when acceleration could be slowed down, or referring to the previous paragraph, a five-car train was allowed to remain in service with a minimum of nine out of twelve T.Ms. working. If manual control was used in this situation the train in the hands of an experienced driver would keep time by notching up the motors a bit quicker than the auto system; a less experienced driver could run through the notches too quickly and trip out some of the main circuit breakers (C.Bs.) thereby finishing up with a lot less than nine motors working, The W.F. facility was not used and the relevant contactors had been removed before 1956 when I was employed by British Railways.

Main C.B. and Fuse were protections against overloads, originally the C.B. was relatively unprotected and if it tripped out under very heavy current conditions it has been known for the arc (flash) to damage other electrical equipment and also body and roof panels. This was later modified by fitting a protective shield to contain the arc, made from an asbestos/soap stone-type material. The main fuse was rated at 400 amps and again if it blew under extreme current conditions the result was spectacular, rendering it to a lump of solidified glass-like substance.

The couplers were buckeye throughout and one of these is reported to have suspended a motor coach over the embankment for some two to three minutes before its securing nut thread stripped at the Irk Valley incident in 1953.



The lavish lining style applied to the electric cars is seen to advantage on this LYR 'official' photograph. Every piece of framing is lined out in yellow and the division between the lake lower areas and the tan upper quarters can be plainly discerned (on the original print) along the waistline. The larger areas like the small window surround are additionally panelled with yellow and red. The photograph was probably taken to show the Gould 'Buckeye' coupler and electrical connections rather than to illustrate the livery details that fascinate us. A trailer car is to the left with a motor car to the right. *Photo courtesy NRM (Hor. F 1676)*

The depot at Bury was not only responsible for the day to day maintenance of the stock but also the overhaul of all the electrical control equipment, and thus an interesting and busy place to be. When a Motor Coach went to Horwich for a General Overhaul it travelled on diamond-frame bogies which were reclaimed from ex-L&Y bogie goods vehicles. Horwich looked after the wiring of the stock though this was also carried out at Bury if needed between overhauls.

Benefits such as line voltage T.Ms. and their associated advantages over two-in-series are no longer in favour; another such idea was the use of a brass shearing-pin used to hold the receptacles of inter-coach jumper cables in position. If a train broke in two (I know of no such instance) or a shunter forgot to remove the jumpers from their receptacles when uncoupling coaches, or any other similar circumstances where coaches were parted, the pull on the jumper cable would shear the brass pin. This would allow the receptacle to hinge upward and the cable and plug slide out, thereby causing minimal or no damage to the jumper, receptacle, or body. Repair time to these items could run into many hours.

In severe winter conditions, mainly heavy snow, a 'ghost train' was run throughout the night. This would be a five-car set run end to end of the line to keep the build-up of snow to acceptable levels. One night during the winter of 1947 the snow built up so quickly that the unit became derailed in a drift at Radcliffe Central station in the platforms. The time for a round trip on this type of work would be about 35/40 minutes. This and the Irk Valley incident were the only occasions during the later days of the L&Y stock existence on which I am aware the service was severely affected. No problems of ice forming on the conductor rail were experienced (as on most other third rail systems) due to the contact face of the rail being vertical.

The M & B line was hard on its stock: ten miles, ten stations, two permanent speed restrictions, tight bends and gradients up to 1-in-48 meant that electrically and mechanically, the units took a pounding day after day for 43 years. The track also received a hammering from such heavy stock running an intensive service: 6 minutes headway in the peak periods; Victoria having 85 arrivals and 73 departures on a week-day in the 1921 timetable. As far as I can remember the service ran almost unchanged to the end of the L&Y stock's life; it was good stock, ahead of its time in many ways, and I don't believe it owed anyone anything after all its years of service. It's a pity not a single coach was preserved.

ELECTRIC TRAIN FORMATIONS.

TWO-CAR TRAIN.

MOTOR–3RD CLASS | TRAILER 1ST CLASS

THREE-CAR TRAIN.

MOTOR–3RD CLASS | TRAILER–1ST CLASS | MOTOR–3RD CLASS

FOUR-CAR TRAIN.

MOTOR–3RD CLASS | TRAILER 1ST CLASS | MOTOR–3RD CLASS | TRAILER–3RD CLASS

FIVE-CAR TRAIN.

MOTOR–3RD CLASS | TRAILER–1ST CLASS | MOTOR–3RD CLASS | TRAILER–3RD CLASS | MOTOR–3RD CLASS

MANCHESTER END OF TRAIN.

Clifton Junction Power Station

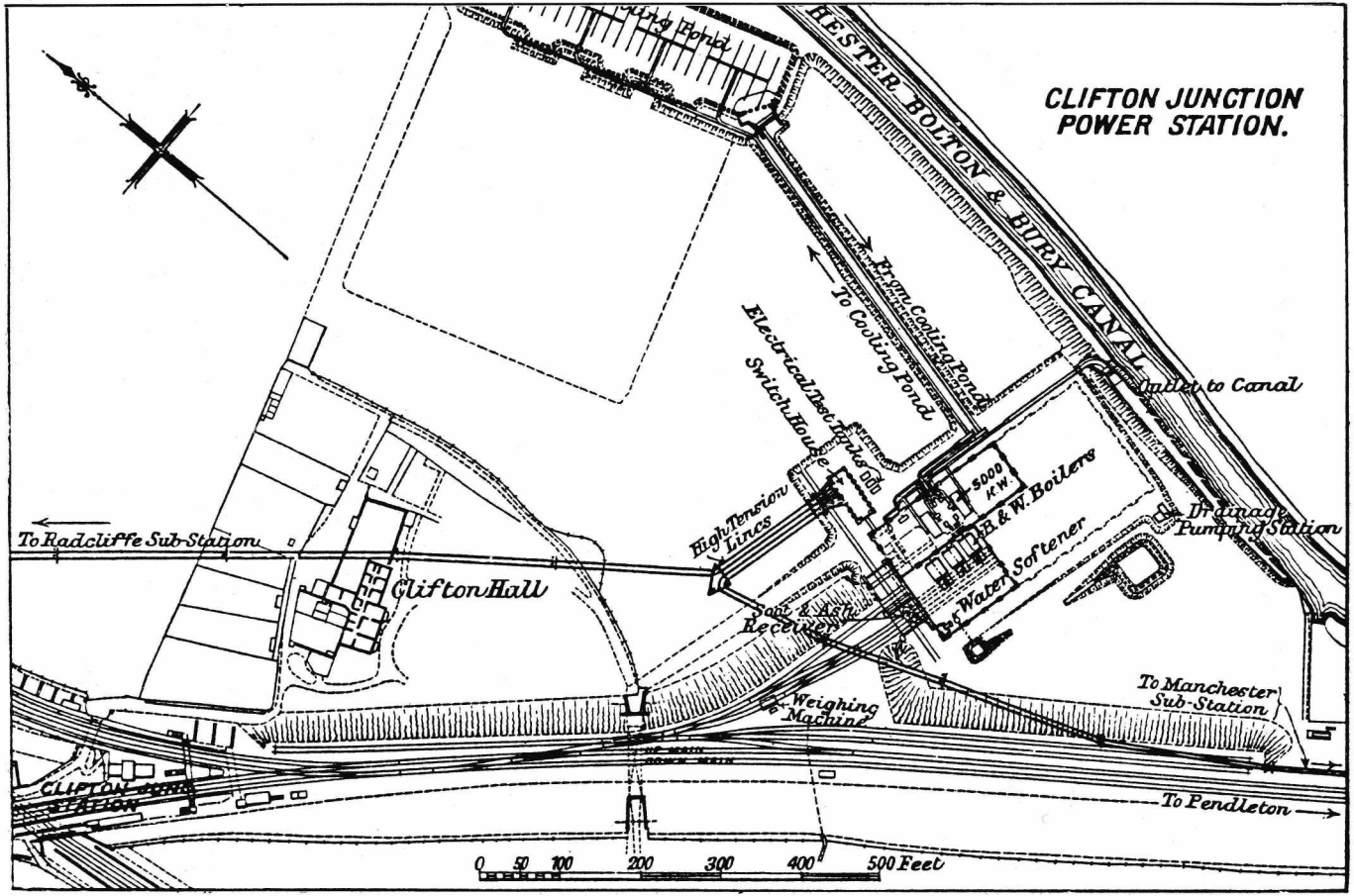
D. CHAPLIN

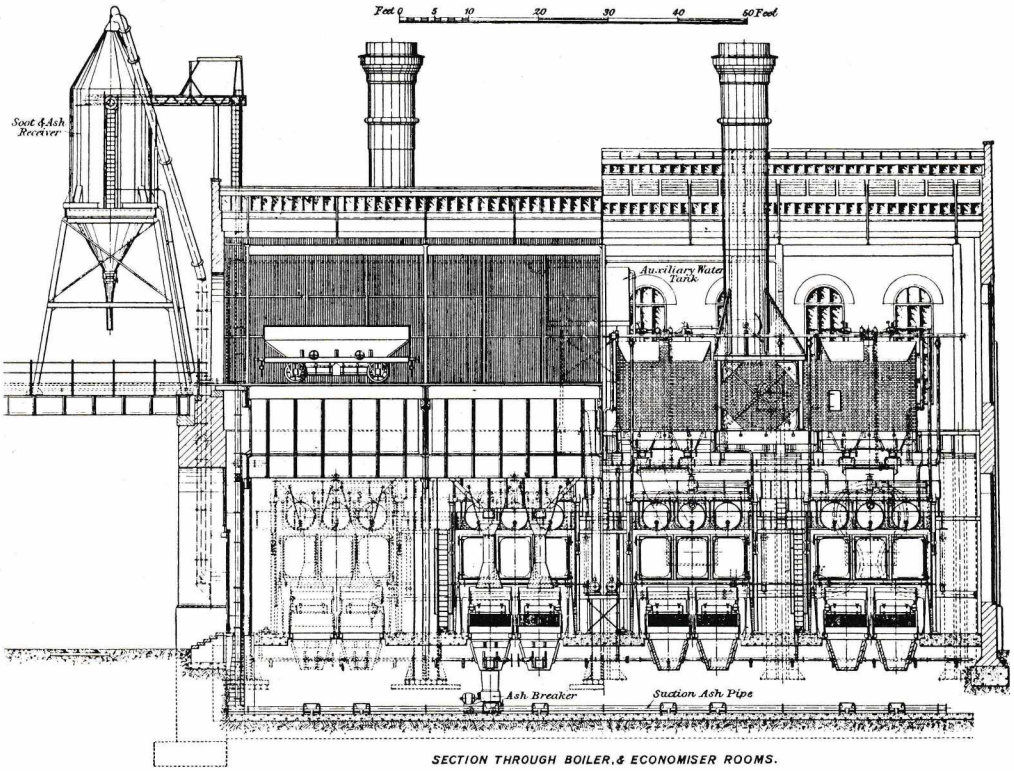
FOR THE INITIAL TRIALS of the overhead collection high voltage DC system by Dick Kerr which took place on the Holcombe Brook branch, power was taken from the Lancashire Electric Power Co's supply, via a motor generator at Holcombe Brook. To supply the power for the Manchester-Bury electrification the company decided to generate its own.

The site at Clifton Junction was chosen because it was level and gave good foundations for the buildings, there was a good supply of water from the adjacent Manchester, Bolton and Bury canal which was owned by the L&Y, suitable steam coal for power generation was easily available from local collieries, and it was approximately 'electrically central' between Manchester and Bury.

The site was at the foot of a 37-ft embankment which was widened alongside the power station site. Three sidings were provided, two of which could accommodate twenty-four 20-ton wagons, the other siding (which was used for shunting) held 16 wagons. The shunting was done by a battery locomotive. With the difference in height between the top of the embankment and the power station boiler house firing-floor it was possible to discharge the wagons directly into the 50-ton bunkers which were fitted to each boiler, thus the need for coal-handling plant was eliminated.

Edward Woods, Ocean Ironworks of Manchester erected the steel frame for the new structure. In the background, the new embankment inches out to meet the brickwork that will form the boilerhouse. (14th September 1916) *Photo courtesy NRM*


CLIFTON JUNCTION
POWER STATION.
Quarry Bond
HESTER, BOLTON & BURY CANAL
From Cooling Pond
To Cooling Pond
Electrical Dept. Offices
Switch House
Outlet to Canal
5000 K.W.
B & W. Boilers
Drainage Pumping Station
To Radcliffe Sub-Station
High Tension Lines
Clifton Hall
Soot & Ash Receivers
Water Softener
To Manchester Sub-Station
Weighing Machine
CLIFTON JUNCTION STATION
To Pendleton
0 50 100 200 300 400 500 Feet



SECTION THROUGH BOILER & ECONOMISER ROOMS.

The boiler house was 100ft long by 90ft wide which gave space for eight boilers to be installed though initially only three were built. These were supplied by Babcock and Wilcox, each boiler being fitted with three steam drums in which steam was generated at 200psi, then superheated to 700°F in the internal superheater tubes. Above the boiler was an economiser where the incoming feed water was pre-heated by the exhaust gases. Each boiler was fitted with an electrically-driven chain grate stoker which had an area of 144 sq.ft.

The steel chimneys were 87'-6" above the firing-floor level, each being 6ft in diameter, and both fitted with electrically-driven induced draught fans.

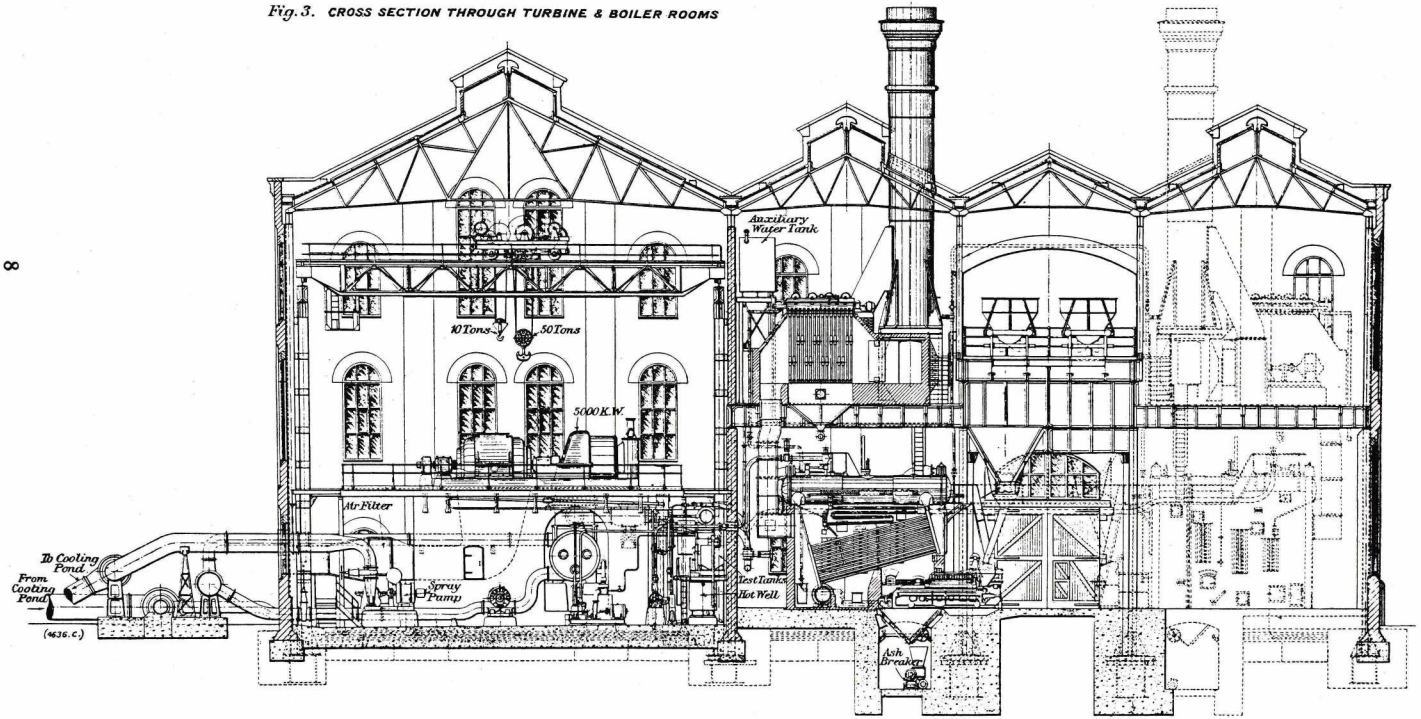
The boilers were fed by Mather and Platt feed pumps, one of which was a reciprocating pump, the other turbine-driven; each pump had a capacity of 10,000 gallons/hour. The boiler feed water came from the canal, being softened and stored in a tank in the boiler-house until required to make up boiler losses.

The Turbine Hall was 188ft in length; it contained two 5,000Kw Dick, Kerr Turbo Generators. The turbine which had ten rows of blades drove directly a 2-pole 3-phase air-cooled generator at a speed of 1,500 r.p.m. The output voltage was 6,600 volts at 25 cycles. From the outlet of the turbine the steam passed into the condenser which maintained a vacuum of approximately 28 inches of mercury at the turbine outlet. Each condenser had an area of 9,500 sq.ft. derived from the 3,464 brass tubes fitted in it.

ELECTRIFICATION OF THE MANCHESTER TO BURY SECTION

THE POWER STATION AT CLIFTON JUNCTION.

Fig. 3. CROSS SECTION THROUGH TURBINE & BOILER ROOMS

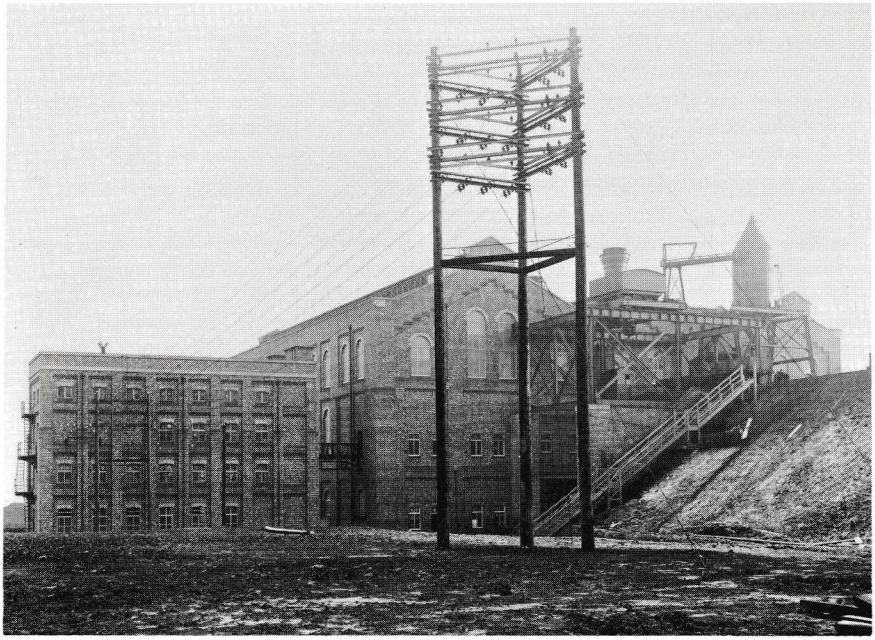


The condensed steam water was pumped from the condensers back to the hot well where it was available for return to the boilers as feed water. The water used for cooling the condenser was returned to the canal via spray coolers above a cooling pond.

In addition to the main generators a 500Kw Turbo Alternator supplied by Westinghouse was installed; this generated current at 440v 3-phase, and was used for driving the power station auxiliary machinery and charging batteries. This generator was used at night when no trains were running and only the power station and goods yards were lit.

Power from the generators was taken by heavily armoured cables to the switch room where remotely controlled solenoid-operated British Thompson Houston switches fed it onto bus bars which were installed in the room above the switch-house. Each set of bus bars was duplicated so that maintenance could be carried out on a circuit independently of the other.

From the bus bar room power was taken to the sub-stations at Manchester Victoria and Radcliffe Junction. The power line was overhead, carried on wooden poles with metal cross-bars, though for three miles at the Manchester end the cables were armoured and carried on short posts. At each sub-station there was room for three rotary converters of 1,000Kw though initially only two were installed. The converters were driven by 900v three-phase motors which derived their power from three single-phase transformers which reduced the 6,600v transmission current. The converters put out the 1,200v DC which was connected to the conductor rails via switchgear at each sub-station.



The completed power station with the high-tension cables coming from the switch house. From the pylon, cables were taken to Radcliffe and Manchester sub stations.

Photo courtesy NRM (Hor. F 1649)

A battery room was installed at Manchester and Radcliffe to supply additional current in the event of surges in demand; these were kept at full charge by a booster.

Section isolators were installed at points along the track which enabled local isolation of lengths to be obtained when work was carried out in the area.

Clifton Junction power station closed in 1933 after which power was taken from the public supply.

Much of the information in this article was found in *The Engineer* for 1916.

In cases of electric failure the following arrangements will apply :—

A COMPLETE FAILURE & SHUT DOWN OF THE POWER STATION

All trains will be worked by steam locomotives on instructions from the Central Control Office. Electric trains which are on the line at the moment of failure will run in series only and the current taken will not exceed 200 amperes per motor car end. This will leave the batteries free to work the electric trains actually on the line to their destinations and every effort must be made to attain this.

B PARTIAL FAILURE OF HIGH TENSION CURRENT

If one or more of the Sub-stations are shut down, certain electric trains will be withdrawn and the current taken by those running in the affected area will not exceed 250 amperes per motor car end.

C PARTIAL FAILURE necessitating CURRENT LIMITATION

Current taken by the trains will not exceed 250 amperes per motor car end when the above conditions 'A' or 'B' are anticipated. This condition applies when there is failure of a Sub-station, insufficient power at the power station, when a high tension feeder has failed or when the batteries at the power station are being recharged after a temporary shut-down.

OVERHEAD WIRES AT AINTREE GRID

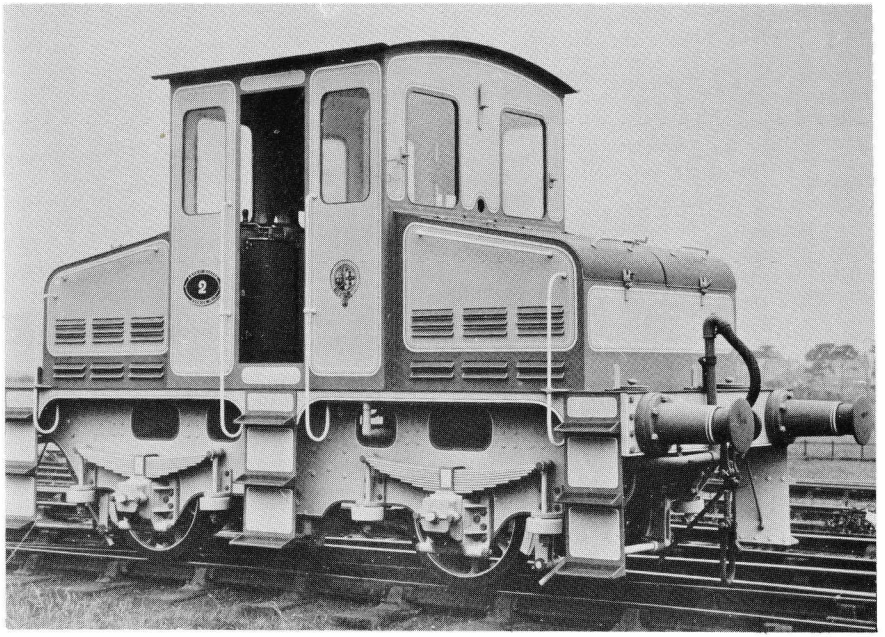
The overhead wires at Aintree Grid in connection with the driving of the electric locomotives ARE LIVE.

Enginemen and others must, therefore, be careful not to touch any portion of the overhead equipment when obtaining water or handling fire-irons etc.

LYR Special Instructions Dec. 1912

The L.Y.R. was one of the first of the English companies to adopt the penny-in-the-slot automatic ticket issuing machines. The company is now experimenting with an electrically worked machine which not only issues tickets but also prints them. This ingenious contrivance is at present in operation at Sandhills station, Liverpool, and it prints and supplies to the intending traveller on the insertion of 'a penny-in-the-slot' a third-class single ticket to Kirkdale.

Manchester Guardian, 13th April 1911



Electric Loco No. 2

B. C. LANE

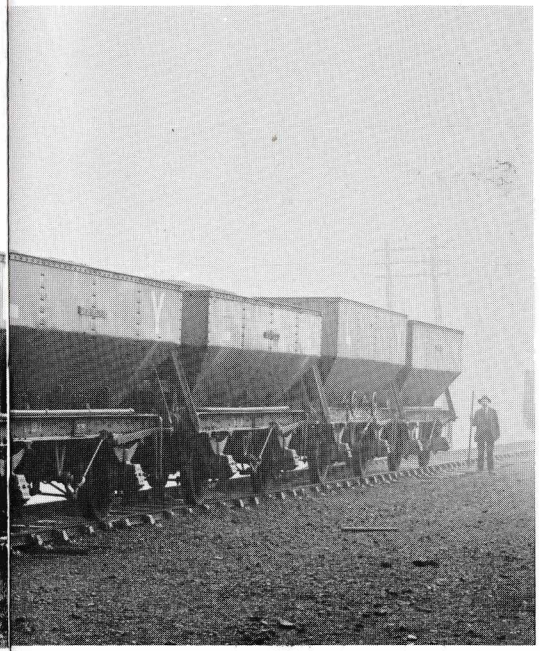
Until the summer of 1917, all shunting of coal wagons at Clifton power station was done with the aid of five electric capstans and bollards but in July of that year, a small battery-electric engine was completed at Horwich works. It could handle three loaded 20-ton hopper wagons at three times the speed of the capstan system.

The tiny locomotive was just 21'-11" long over buffers and had a wheelbase of 9'-0". The wheels were 3'-0" diameter and were driven by two British Thomson Houston Co. motors of 18h.p. each. B.T.H. had supplied switchgear for the Clifton power station. The total engine weight was 17 tons 18 cwt.

On the rare occasion that No.2 was out of service, a 'Pug' from Agecroft shed was used instead.

John Marshall writes that the engine was built over a twelve month period and puts the building date as 1917/18 in every mention of it. The small cabside numberplate states 'HORWICH 1917' and so this account takes that year as the time of construction and probably introduction to service. The numberplate, although of standard type was much smaller than the normal ones and the character '2' was badly formed with too much curve on the upper part and no serif on the lower horizontal.

Our heading illustration is the 'official' view of the locomotive as painted in various shades of grey. The lining shown on works grey paintjobs usually suggests



LEFT—No.2 and four of the special 20T wagons on the embankment leading into the boiler house. The wagons were fitted with the vacuum brake which enabled the tiny engine to completely control the load. The leading wagon is number 30790 with a 'Clifton' plate attached but it was originally plated for Formby. Notice how the through pipe for the vacuum brake is arranged along the wagon frame on the opposite side to the handwheels for the hopper doors.

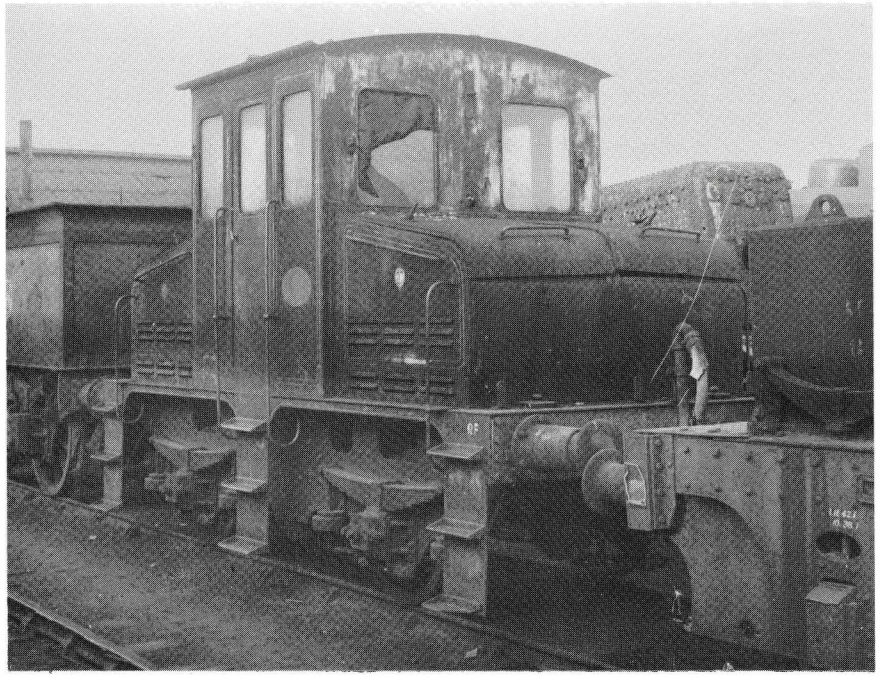
Photo courtesy NRM (F2621)

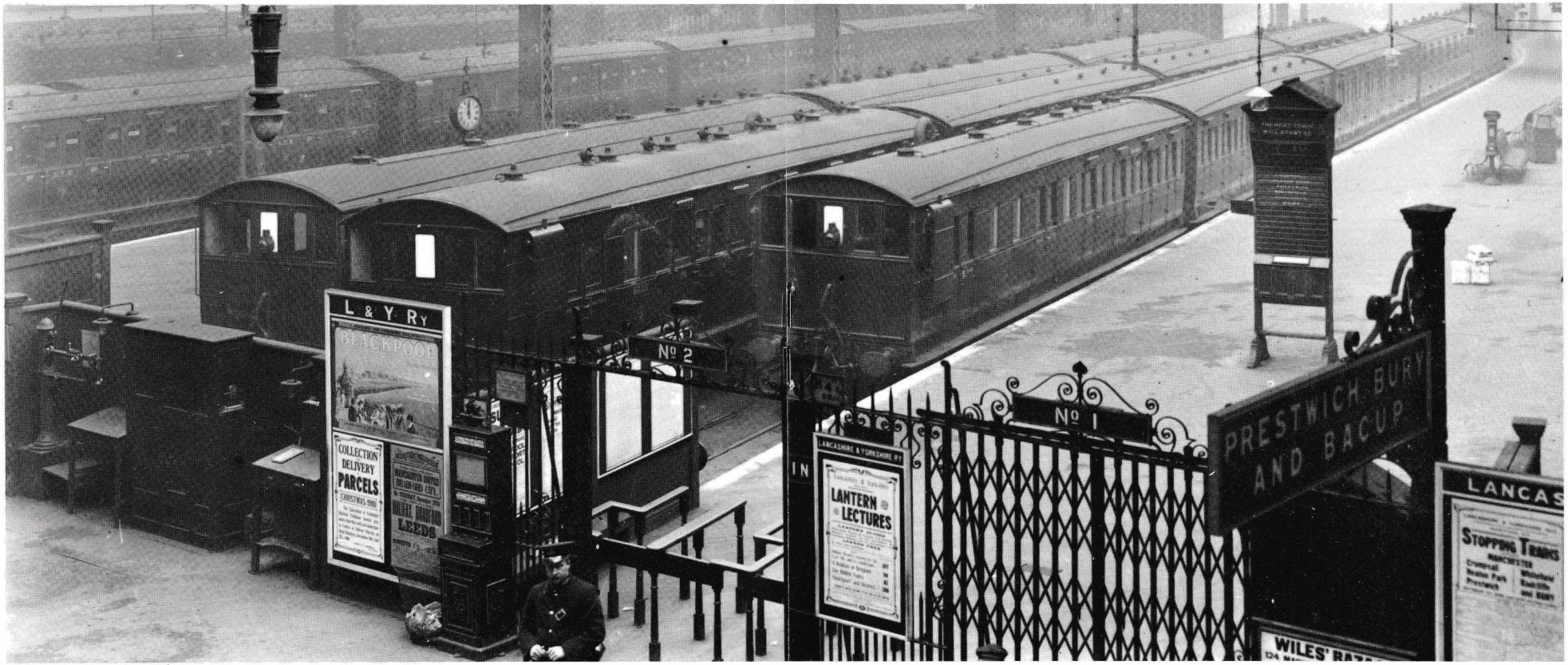
BELOW—The engine awaiting scrapping at Derby, November 1947.

Photo by E. S. Russell.

the final livery style but in this case, only the body panel style was actually applied when it was put through the paintshops. No.2 was put into service in the standard black loco livery with red buffer beams bordered with a fine white/black border to the sides and below. The lining on the body was the usual 'passenger' combination of a wide red outer line with two thin white lines within. All panels were given curved corners however which was the opposite to those on the normal loco livery. This was nothing new as it was used on 4-4-0 No.1112 in 1901 and again on the same engine after rebuilding with superheated boiler etc in 1909. In the electric engine's case, it might be thought that the lining was related to the styles on the carriage stock but such lining was only ever applied to panelled coaches on 'steam' stock and the electric stock had its own form of squared corner lining. Certainly, the usual style of engine lining with incurved corners would not have looked as well on No.2 as the style actually applied. As usual with contemporary photographs, the white lines show well but the red 'outer' can be picked out with a magnifying glass on the original prints.

No.2 retained its LYR livery for thirty years but at some time before being transferred to Scotland by the LMS in 1933 the positions of the crests were altered. The standard 10" one on the cab was painted out and small ones as applied to the LYR road vehicles were applied to the 'bonnet' at each end. As the battery engine would be kept inside at night while being charged, the paintwork would not spoil unduly and I suspect that the LMS had the originals painted out only for some old company man to apply the little ones later. Of course, the engine may have received a full repaint before the end of 1922 but that is unlikely. Without doubt, it was the last locomotive to carry LYR livery when other locos were ready to receive the new British Railways markings!





Before the Bury service was electrified, the eastbound bays at Manchester Victoria were a haven of the Attock arc roof carriages. In fact, the style changed little through thirty years up to electrification as the vehicles changed only from six to eight-wheeled varieties of the basic 'Attock' design. A closer look at the make up of the trains reveals many interesting details though.

The photograph was taken in December 1910 around the middle of the day. These platforms would be very busy in the morning and evening rush hours but at this time of day, a relative calm is evident for not one passenger can be seen anywhere.

The adverts show an interesting contrast. A large one shows a summer scene of Blackpool captioned "Westerly Breezes" (in December) whilst below it the LYR Co. states how the parcel service will be curtailed on the Bank Holidays after Christmas as Christmas Day fell on Sunday (as it did in 1988). Adjacent is an excursion bill for the Manchester United football match against Bradford City on Tuesday 27th December. The special left at 12-25pm and tickets cost 2/9 for Halifax, Bradford or Leeds.

The three examples of guards' brake third class carriages are different to each other. The right hand of the trio is the common Diagram 30 type of which 257 were built between 1896 and 1900. It was the common suburban vehicle by this date although they formed the main line trains when introduced. In the centre is a similar 49ft. brake built to diagram 31 with six third class compartments and a small luggage van. Only 23 of this type were built and they were intended for 'local' services only. It carries the number 2311 and rather oddly has a torpedo ventilator to every compartment when it was the practice to provide only 'smoking' compartments with them. The left hand vehicle is mostly hidden but is easily identified as a 54ft. Diagram 42. The new length was introduced in 1900 and was more or less the same as the 1896 variety with an extra compartment. Two of the three brakes have permanently fixed tail lights lit by gas and controlled from within . . . . an admirable effort to get away from oil-lit tail lamps.

The train in platform 2 is the 1-10pm to Bury stopping at all stations. Probably a shorter set would suffice but the six-carriage train would suit the morning and evening needs. The set would seat 320 (or more) third class passengers and just 36 firsts in the two composite vehicles in the middle of the train.

Two of the trains include 49ft eight-compartment thirds that are lit by electricity whilst the first class still have gas lamps. Notice how the torpedo vents are arranged away from the centre line on these vehicles. The LYR built 50 of the 54ft brakes (D.42) with electric lighting in 1901 but it was very rare to see a complete train with such lighting as gas lights continued to be fitted to most new stock for another decade or more.

Photograph courtesy NRM (Hor F794)

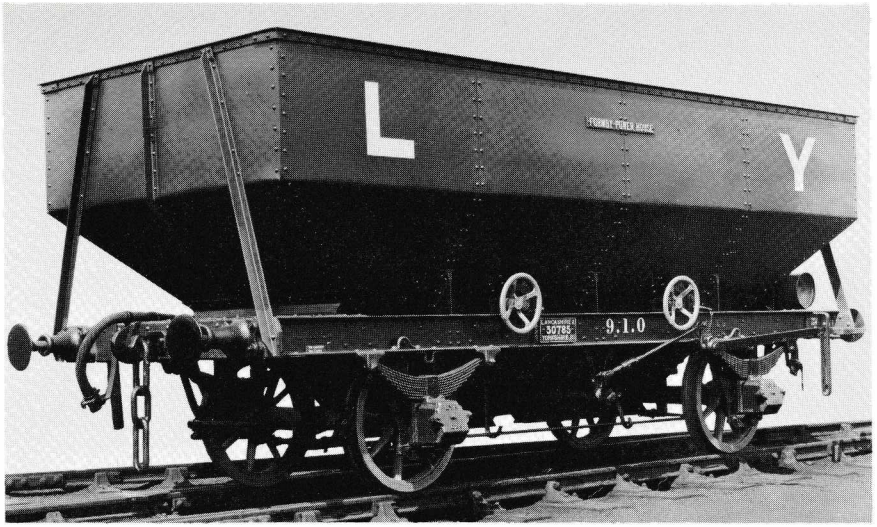


Diagram 54 20T Steel Hoppers

by N. G. COATES

When the first few wagons of this type took to the rails in 1904, nothing like them had ever been seen before on the L&Y. The reason for their building was supply vehicles for Formby Power House on the newly electrified Liverpool - Southport line (see Platform 14, p.10), not only taking the coal but returning with the ash; consequently the first order bore destination plates for 'Formby Power House'.

The design was the result of the demand for a reliable high-capacity hopper wagon. Wooden vehicles would probably not have been reliable enough as the new 20T semi-experimental coal wagons with bottom doors could not discharge all the load by gravity alone. There was already some expertise within Britain concerning steel-sided vehicles, the North Eastern had its ironstone wagons, the LNWR its West Cumberland hoppers and the LSWR had bought some ballast wagons from Hurst Nelson in 1898 whose style fitted the L&Y needs very well. Not too much thought or adaptation was necessary and there was always the American connection. Within the L&Y, the ability to build in steel was there with the Gas Receiver Wagons, Well and Tramcar Trolleys. Normal construction at this time was small-size wooden wagons such as the Dia.3 Covered Goods. Large numbers of 12ft-wheelbase wagons were way in the future. Right-hand cross-corner brakes had just been adopted as standard, as had the oil axlebox.

The success of these vehicles was quickly realised and the second order contained two extra allocations. A further development was an increase in height which, although rated for the same tonnage, probably prevented spillage of the load. The next two orders G40 and N42 possibly cover the replacement of old 10T wooden hopper wagons of the late 1870s whilst the final 22 would seem to be for the forthcoming Manchester-Bury electrification though they didn't make it in time and some 'Formby' wagons were re-designated 'Clifton Power Station'.

Construction was quarter inch plate body shoehorned between 9"x 3½" x ½" channel solebars and crossmembers set 2'-9" in from the headstocks. The body braced the underframe and vice versa whilst the wheels and brake gear were squeezed within the remaining space around the hopper doors. Such was the premium on space that the vacuum gear was fitted on top of one end-platform and the pipe ran on top of the solebar. Standard wagon grey was used with full-size letters from the outset.

It seems as if some of the earlier vehicles were rebuilt to the new height at a later date as 30785, 30794 and 3080x are all 9'-3" in their later life whilst 30789, 30790 and 30813 are 8'-6" much earlier, nor can these vehicles stem from that curious order for different heights, F37, which was not completed when 30790 and 30813 were photographed. Some of the expertise learned from these vehicles was eventually put into practice with Dia.78 and 79 centre and side dumping wagons.

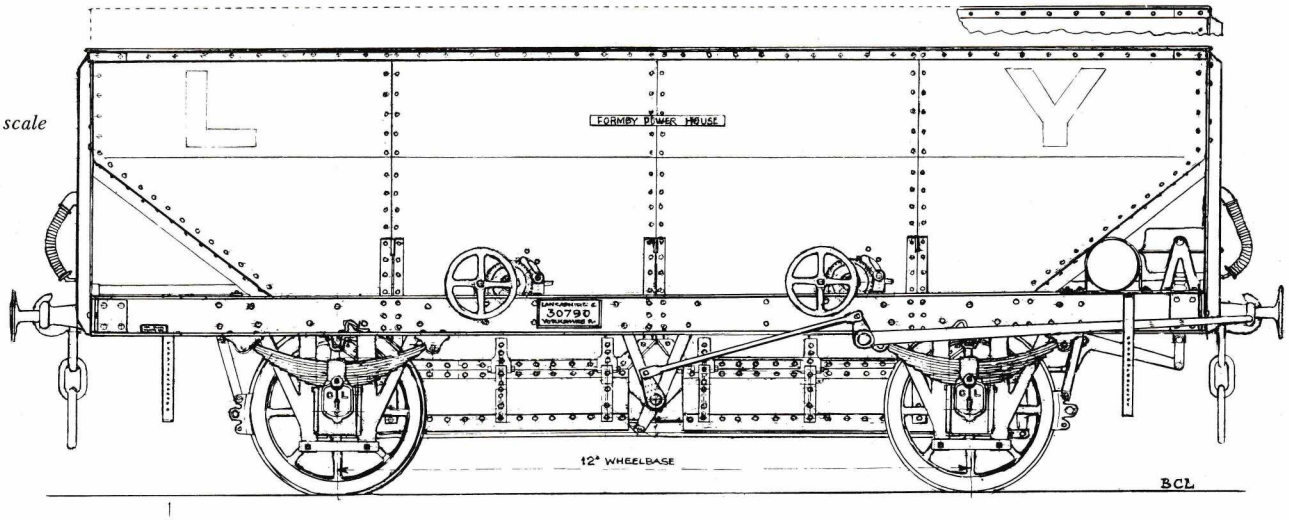
The subsequent history of the wagons has been largely unrecorded by photographers. One of the 'Horwich' wagons 16080x was caught by the camera about 1937 in wagon grey with the large LMS letters, a rusting panel where the destination plate had been had the legend written in white. Finally, the Diagram Book page has the familiar note 'Breaking Up 1951' which suggests some lasted into BR days but no photographs or details are known'

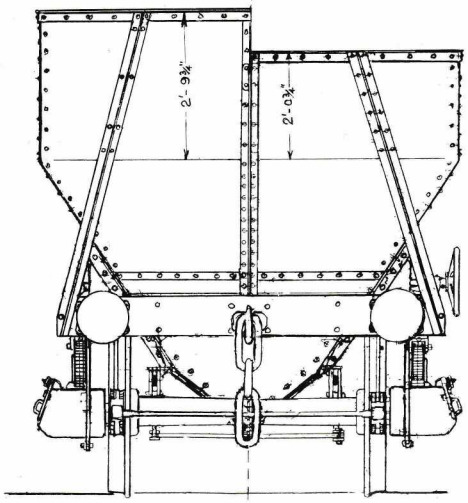
Diagram Book Page	*Description*	*Date Ordered*	*Order No.*	*Quantity*	*Drawing Nos.*	*Account Charge*	*Cost* £ s. d.	*Delivery*	*Capacity*	*Tare*	*Notes*
54	*Steel Hopper Coal Coal Wagons*	*25 June 03*	*S 35*	*45*	*5123* [1]	*Capital*	*121 9 7*	*1904*	*684 cu.ft.*	*8-11-3*	*Known numbers 30785 - 30813*
„	*Steel Hopper Wagons 20 Tons*	*late 1904*	*F 37*	*40*	*5783*	*Cap?*	*117 10 5*	*1906*	*809 cu.ft.*	*var.*	*Some of this order* [2] *8'-6" high (684 cu.ft)*
„	*ditto*	*27 Oct 06*	*G 40*	*5*	*5783*	*Renewal*	*120 5 0*	*1907*	*809 cu.ft.*	*8-14-0*	
„	*20 Ton Steel Hopper Coal Wagons*	*23 Dec 07*	*N 42*	*20*	*„*	*Renewal*	*104 1 9*	*1908*	*„*	*„*	
„	*ditto*	*7 Aug 16*	*O 54*	*22*	*„*	*„*	*294 13 5*	*1918/19*	*„*	*,*	*11 built in each year*

NOTES

1. *Other drawings include 5212 Ironwork; 5213 Cast iron work; 5214 Brake; 5216 Buffer cases; 5272 Chains for doors; 5279 Protecting cross shaft.*
2. *Distribution given as:—*
   HORWICH six 9'-3" high and ten 8'-6" high.
   NEWTON HEATH eighteen 9'-3" high.
   FORMBY six 8'-6" high.

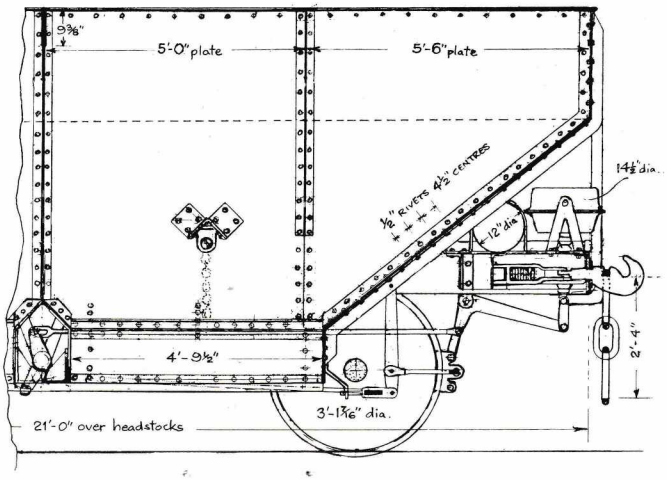
7mm scale





Drawings traced from original LYR general arrangement drawings Nos 5123 & 5783. Original design and size shown in elevation above with higher body sides added above. The composite end view shows half of each size without vacuum brake as this varied. Sectional half-view to the right .

Drawings by B. C. Lane



Wagons 33165 and 30789 on the ash siding at Formby about 1910. The two different body sizes are immediately apparent. Not so obvious are the alternative positions of the vacuum hose between the earlier and later vehicles. Note too how the vacuum piping is taken around the frame on the opposite side to the hopper door handwheels. In the foreground is some 18" gauge trackwork similar to the Horwich and Newton Heath systems . . . . the latter like Formby being manually operated.

Photo courtesy NRM (HOR F836)

Electric Lines Rule Book

The LYR produced pocket books of rules applying to many departments and the Central Electrified Lines were no exception. It was dated February 1919 and as it applies particularly to the Manchester-Bury-Holcombe Brook lines, it is reasonable to expect that a similar edition was also produced (at an earlier date) for the Liverpool services.

The inner cover was printed with a table of dotted lines for the identification of the 'Department' and 'No.' with several spaces for 'name' and 'grade'. The booklet was obviously intended to be passed on to further members of staff and a note stated that "This book is the property of the Lancashire & Yorkshire Railway Company and must be returned on request and when leaving the service."

The booklet first listed a glossary of terms used. It must be remembered that at the date the lines were electrified, electricity was a novel power source that was not understood by the majority of railway workers and so some very obvious simplicities are included. Thus "CURRENT, ELECTRIC—a term used to denote the flow of electricity along conductors such as live rail or high-tension feeders" is utterly basic to us. Some of the terms seem too simple .... "RUNNING or TRACK RAILS—The rails on which the train travels." Rule 10 in the booklet states in bold print "IT IS DANGEROUS TO TOUCH OR STEP UPON THE LIVE RAIL AND ITS CONNECTIONS AND MEN ARE ABSOLUTELY PROHIBITED FROM DOING SO ...." Rule 11 tells us that the High Tension Feeder Cables are alive with electricity at 6,600 volts then goes on to state "It is dangerous for the staff to disturb or interfere with the High-Tension Feeder cables or stumps or to allow anything whether metal or other material to touch the bare overhead wires." The staff must have been somewhat naive about electricity in those days for instructions were always laid out as simple as possible so that everybody would clearly understand them. Other rules are more enlightening. Rule 50 tells that it is dangerous to play a jet from a fire extinguisher or hydrant hose onto high tension cables when they are alive and 51 tells us that anything fallen on the live rail which causes a fire or arc must be removed at once by means of a wooden paddle or other non-conductor. 52 tells that fire on the live rail must be extinguished with dry sand. Water, damp sand or ballast must not be used as they would make the fire worse. In spite of these explicit instructions, a number of accidents did take place like the death of fireman Hartley at Manchester Victoria in 1922 while raking out the ashpan of an engine on one of the electrified roads there.

Contained within the text are several pieces of information not generally found elsewhere. Rule 57 tells us that a conductor rail brush car was stationed at Bury Car Repair Shop for the purpose of clearing snow from the live rail. In the event of snow between the hours of midnight and 5 a.m., the shift engineer would decide whether to clear the line by making the first trains into five car sets or to call out the above rail brush car.

Rule 67 states that the guard of the train must, so far as his duties permit, travel in the rear controller compartment.

Rule 97 states that "if an electric train fails, an electric train or steam locomotive following may assist it as far as may be necessary." With the basic rubbing-pads instead of buffers and buckeye couplers, a steam engine could not couple to the train and would seem to be ill equipped to propel it for any distance.

The ladders hung below the bodies of the electric vehicles have always suggested emergency use for passengers escaping from stranded stock. Rule 99 tells us that the ladders were provided to enable passengers to alight from or join the trains in the event of services being operated to either side of an obstruction.

Other points from the rule book reveal that the smoking-compartment of each car must always be at the Manchester end! Also, no train must exceed five cars unless specially authorised. Train formations are also illustrated in the diagram reproduced here but we know that (at least) latterly, the trains always ran in five-car sets.

We are indebted to member D. Ashworth for the loan of the Rule Book from which the above observations and extracts have been taken.

HOW TO CUT OFF THE LIVE RAIL BY SHORT-CIRCUITING THE LIVE RAIL

If it is necessary to Cut Current Off the Live Rail IMMEDIATELY owing to arcing from a short circuit endangering life or property, this can be done by:—

(a) Operating the Short-Circuiting Switch on an electric train and subsequently applying a Short-Circuiting bar.

(b) Applying a Short-Circuiting Bar across the Live and Running-Rail.

Either of the above methods will operate the Sub-station Circuit Breakers which will make dead that section of the Live Rail. The Sub-station must immediately be advised of the fault and of the short circuiting switch having been operated or the short-circuiting bar applied.

Whichever method is used, the short-circuiting bar must not be removed until the defect has been made good or arrangements have been made and current cut off the Live Rail or the car affected in accordance with the provisions of Instructions 16 to 24, 44 and 45 or 154 to 156.

To apply a short-circuiting bar, stand in the four-foot-way and place the bar on the running rail adjoining the Live Rail as shown in Fig. 1. Then slide the heel of the bar 'A' against the inside of the running-rail, when the contact plate 'B' will be immediately under the Live Rail. Steadily lower the handle 'C' until contact is made with the Live Rail as shown in Fig. 2.

The head should be turned away when contact is being made.

A red flag by day and a red light by night, in foggy weather or during falling snow must be exhibited at the short-circuiting bar as shown in Fig. 2.

METHOD OF APPLYING SHORT-CIRCUITING BAR.

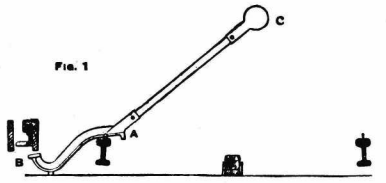


FIG. 1

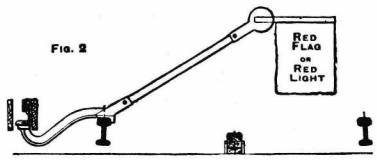


FIG. 2

Altercation at Penistone

Dr. A. EARNSHAW

My recent articles in *Platform* have covered two untimely interruptions in the working lives of Aspinall 2-4-2 tanks, No.664 at Huddersfield (Platform 24) and No.661 at Penistone (Platform 25). So I suppose I should carry on the theme, providing I have the kind permission of our long suffering editor.

No doubt there would have been some wry comments about my introduction of a LNWR engine photograph in Platform 24, and now I suppose there will be more observations about my parentage by bringing in a photo of a GCR loco. My only defence is that both these 'foreign' engines had the unmitigated gall to impede the progress of one of the L&Y's 'workhorses'.

Seriously, the number of accidents involving 2-4-2T's was quite considerable; but due to the very large numbers of the class, the amount of mileage (on what were frequently intensively worked urban lines) and the length of service, it is perhaps not surprising. However, the accident I want to relate, happened at a far-flung outpost of the L&Y—Penistone, in February 1927.

Whilst researching my article on the demise of No 661 at Penistone in 1916, I telephoned the NRM and asked for the accident report of the 2-4-2T at Penistone. Actually three reports duly came to hand, for little did I know that there were several accidents involving the class at this junction station. Of the three reports I received, I became quite intrigued in the accident of 1927, which was potentially the most dangerous of all.

Penistone is a high moorland town, where a large steel works grew up around an existing agricultural community. Though it was quite a fast growing town in the early 19th-century, it assumed greater importance with the opening of the

Sheffield, Ashton-U-Lyne & Manchester Railway in 1845. Five years later the Huddersfield & Sheffield Junction line opened, providing a link to the north-east. At first this line was worked by the SA&MR, who stabled a locomotive at the LNWR shed in Huddersfield. Eventually the L&YR took over the working of the line, and for many years the services were worked by the Aspinall 2-4-2T's and 0-6-0 tender locomotives. Most of the passenger services were worked beyond Huddersfield, to Halifax or Bradford Exchange, an arrangement that continued into LMS and BR days.

On February 28th 1927, a 2-4-2T left Bradford Exchange for Penistone with a four-coach train, made up from three ex-LYR bogie coaches, and one ex-MR brake third. For most of the journey beyond Huddersfield the engine was travelling in darkness, eventually arriving at Penistone's up-branch platform at 5.32pm. As the train was being followed by an empty coaching stock train, it was necessary to clear the up-branch line. To facilitate this the now empty passenger train was propelled over a trailing cross-over on to the down-branch line, thereafter it was drawn up to the down-branch platform. Here the train was to remain until 7.25pm, when it would form a down working to Huddersfield, meanwhile the 2-4-2T was uncoupled ready for turning.

The tank engine, No.10760 (formerly L&Y 1327), was taken by Driver Clay and Fireman Sowden for turning on the opposite side of the GCR main line. At 5.56pm LNER signalman Fillingham came on duty at the Junction Box, and was advised of the position of the coaches in the branch platform, and the engine on the turntable road. Fillingham took charge of the box at 6pm, just as the ECS train arrived from Huddersfield, which was then to form the 6.10pm train from Penistone to Doncaster. At the same time driver Clay blew his whistle to denote his readiness to leave the turntable. Fillingham dealt with the ECS train first, by directing it into the down-loop platform by a series of shunting movements.

Having dealt with the Doncaster train, the signalman then turned his attention to the light engine, moving it to the end of the now vacant down-loop platform. Here it was held whilst an empty coal train proceeded on the up-main line, though there is a dispute in the evidence as to how long the engine stood at that point. At 6.21pm Fillingham continued the shunt of the light engine by obtaining "line clear" for a wrong-road movement from the LMS Box, though he failed to enter this in his train register. At 6.22pm he sent an "out of section" message to the West Box, and cleared the points for the light engine to run over the cross-over points to come to a standstill on the up-main by no. 34 points. By now things were starting to go very wrong, yet the disaster that was looming was un-noticed by all concerned. The problem was then compounded when Fillingham omitted to pull the lever for the up-branch line junction trailing points, lever No.27. In his evidence he says that he attempted to rectify the error by showing a white lamp, in effect ordering Driver Clay to set back, in the facing direction. As he saw the engine begin to move the telephone rang, and he went to answer it. The message was from Dunford No.1 box, reporting the 5.35pm express from Manchester (Central) to London (Marylebone). Fillingham rightly acknowledged the train, but did not accept it. He again failed to enter the communication in his register. He then offered the up-train to Barnsley Junction Box, who promptly accepted it.

Now things had passed all salvation, and disaster was inevitable. Fillingham looked out of his box, and when he failed to see the light engine, assumed it had passed his box whilst he had been on the telephone. He did not look up the main

line, for as he stated, "I did not look up the main line, as I did not expect for a moment that the engine would have been there". Consequently he then accepted the express from Dunford No.1, with the 2-4-2T sitting blissfully unaware on the up main line. The problem was compounded by another train which had been running ahead of the express, an up coal train, which Fillingham was unaware had been held at Dunford for the express to pass. This train was evidently on Fillingham's mind when he accepted the express, and as he later stated "I cannot say that I had the express on my mind when I made the movement of the engine from the turntable, and I do not think that I had the express in mind when the light engine left the down-loop for the down-line; in fact, if I had thought that the train [express] was to arrive at 6.26pm, I would not have permitted the light engine to move".

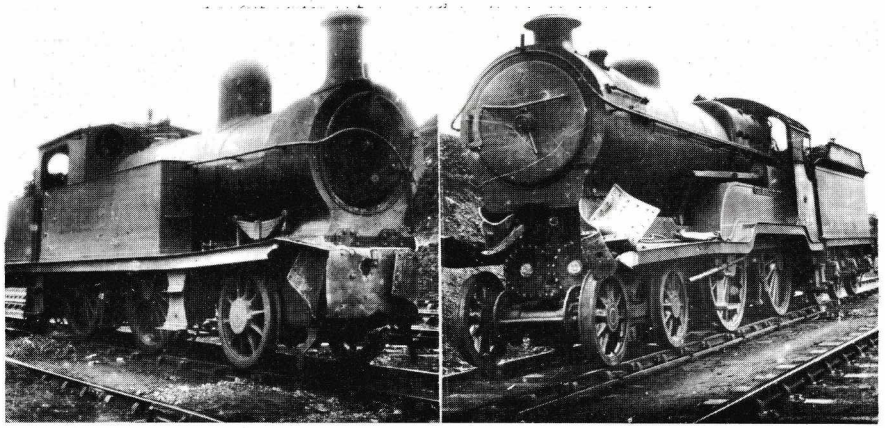
Obviously the signalman's concentration was poor to say the least, but the footplate crew on 10760 were also making mistakes that would contribute towards the collision that was now just moments away. After signalling his readiness to leave the turntable road, and in direct contravention of Rule 134, Clay allowed his fireman to leave the engine to attend to the train lamps and fetch a brew of tea. In moving off after he had allowed Sowden to go, he also broke rule 185 which states:— *'Where the movement is over Points worked, bolted or locked from a Signal-box or Ground Frame, the Guard or Shunter, if a fixed signal is not provided for the movement, must have an intimation from the Signalman or person working the Ground Frame that the movement may be made and must, as far as practicable, see that the Points are in their proper position before a Signal is given to the Driver to move'.*

The fireman was away about four minutes, and as he returned to the engine he heard Clay sounding the whistle to remind the signalman that he was standing by No.2 signal, at the end of the slope from the up-platform. There is contradictory evidence from the loco driver and the signalman about how long the engine was allowed to stand on the up-main, but when the signals were lowered for the express Clay realised they did not apply to him. He had just set off at a walking pace, heading bunker first in the direction of Sheffield. By pure chance Sowden looked out of the front window and saw the express heading towards them, only a distance of about 50 yards away. The fireman shouted a warning and managed to jump clear, as indeed Clay could have, but the driver stayed at his controls and opened the regulator fully in an attempt to lessen the impact.

Due to a speed restriction on a curve leading to Penistone Station the express was going little more than 20mph. It was headed by LNER D10 (ex-GCR) 4-4-0 No.5437 *Prince George*, with driver W. Yeomans driving from the right-hand side of the cab. Obviously the express was running under clear signals when it saw the light engine sitting on its road. The LMS loco became visible to the LNER crew at a distance of around 70 yards, who saw the tank engine by light reflected from the platform lamps. The express crew braked fiercely, and managed to slow the speed to around 15mph. Despite this, and even though the 2-4-2T had now picked up some momentum, the express collided with it head-on. The buffers became entangled and, thus locked together, the engines travelled towards Sheffield for some 465 yards.

The five coaches of the express became detatched due to a fracture of the leading draw-bar hook on the first coach, but they too ran on for 245 yards after the collision. The last 45 yards of their journey was with the leading bogie derailed, due to debris being deposited on the track from the damaged locomotives.

Damage to the coaches was relatively light, in the form of broken windows and buffer castings etc, but 38 passengers suffered minor injuries or shock. The crew of the LNER engine suffered minor injuries and were taken to hospital with three of the passengers. However, Driver Clay was severely injured as a result of his staying with his engine, and it was over two months before he was well enough to give a statement about the accident to the investigators. Both engines suffered considerable damage around the smoke-box and buffer beams, and though the 2-4-2T was repaired, it only continued in service until it was scrapped in 1931.



The engines were both photographed after the event, and to make the visual impact more dramatic, a postcard was produced with the LNER engine printed in reverse, showing it and the 2-4-2 buffer-to-buffer in an attempted simulation of the actual crash.

Lieutenant Colonel A.H.L. Mount was appointed to investigate the accident, and in his report of 7th June 1927, attributed the accident to three direct factors. Clay was censured for failure to observe rule 134 which states:— *'Except where otherwise provided, no engine must be allowed in motion on any Running Line unless both the Driver and Fireman are upon it."* But the inspector mitigated this by saying that in this case he did not think the presence of Sowden would have greatly affected matters.

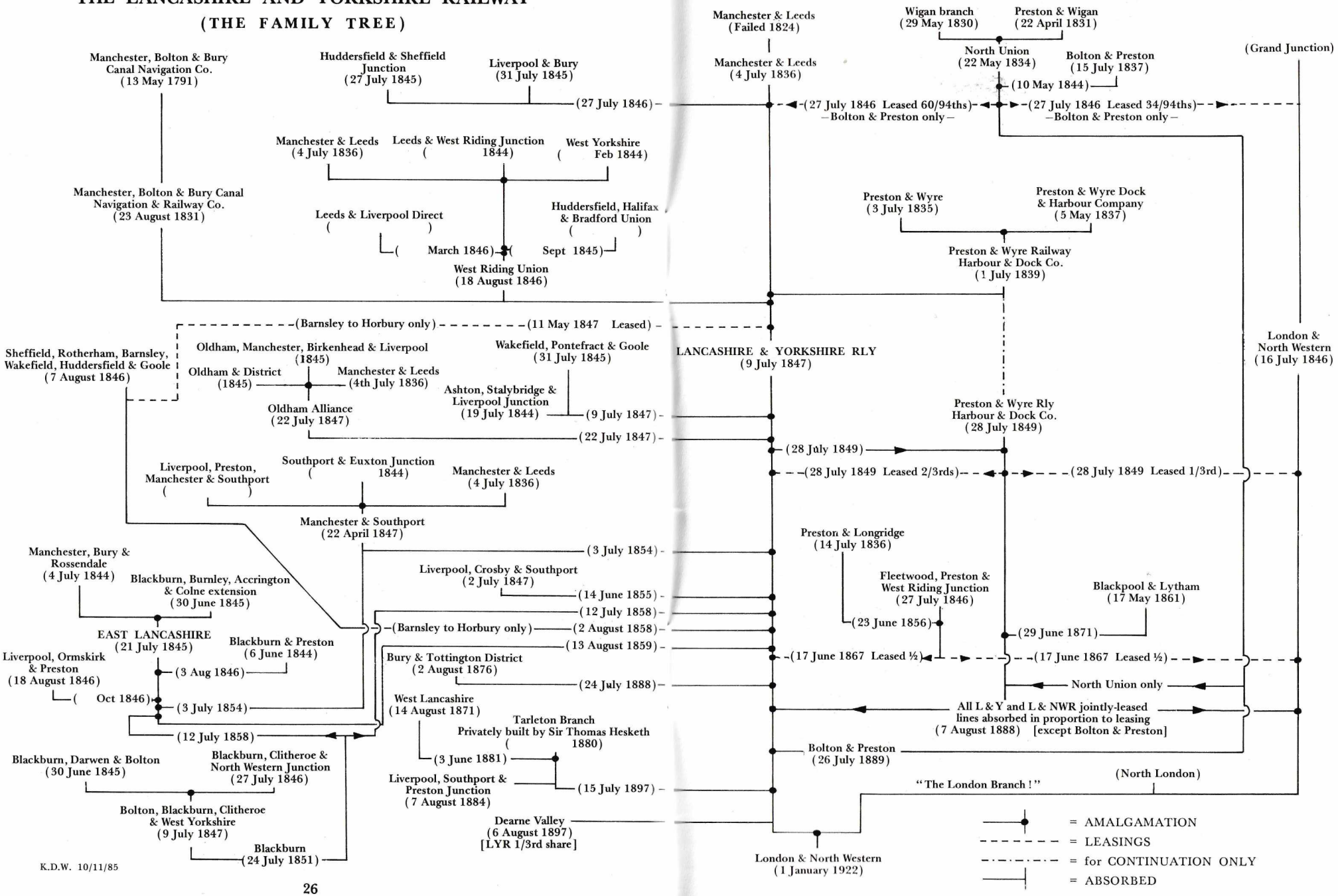
Signalman Fillingham was blamed on two counts, firstly on his error of judgement concerning the timing of the express, and secondly in the omission to properly set points no.27, and subsequently failing to exercise proper care in the supervision of the movement. It was indeed unfortunate that Fillingham, who had 35 years meritorious service, chose to move 10670 at all before the passing of the express, as there was over an hour in which to do this after it had passed.

The incident did have an effect on the future working practice of Penistone, particularly with reference to those services off the former L&YR line which terminated there. This came in the form of a shunt signal controlled by the LMS Box, interlocking with the No.27 points. Additionally a notice to the appendix was issued concerning the 'blocking back inside home' signal, and a clear directive issued to signalmen at both the LNER and LMS boxes concerning the working of light engines over the main line to the turntable.

CONSTITUENT COMPANIES OF

THE LANCASHIRE AND YORKSHIRE RAILWAY

(THE FAMILY TREE)



K.D.W. 10/11/85

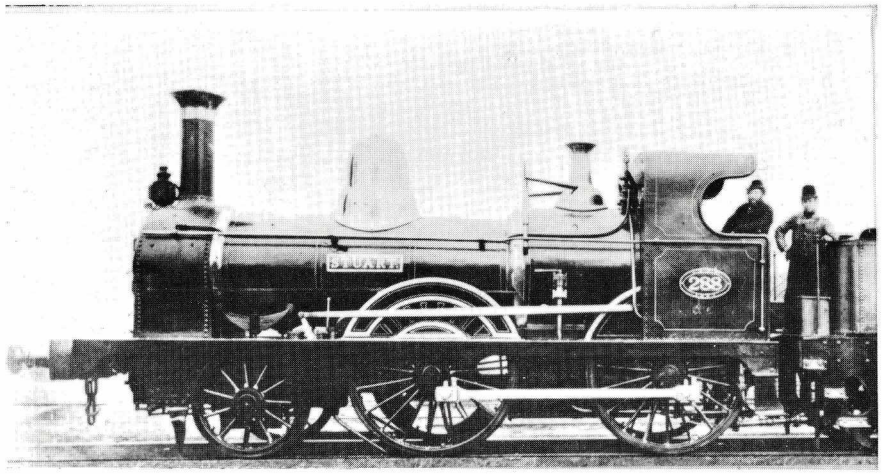
Holme or Hare?

TOM WRAY

SOME TIME AGO when I was dealing with an enquiry relating to William Stuart, who was a director of the L.Y.R., I had reason to consult Bradshaw's Shareholders' Guide.

Although locomotives do not figure large in my interest in the L.Y.R. I have been following the intriguing discussion regarding the Jenkins locomotive No.302, *Holme* or *Hare*? According to Marshall and Rush, Nos. 286-291, 300-302, built between April and December 1861; 321 and 334 built in May 1864 and February 1865 respectively, were named after some members of the board of directors. These eleven locomotives were followed by eleven more, without names, in 1865 and 1867.

Between 1859 and 1861 the board of directors numbered twenty-two. As the act of 14th August 1859 empowered the reduction of the board to twelve members this was done gradually until by 1867 there were thirteen. Throughout these years James Holme, of Liverpool, continued to be a director. Unfortunately my source is blank for the years 1868, 1869 and 1870, but by 1871 James Holmes' name had disappeared from the list. During these three blank years Theodore Julius Hare, of Crook Hall, Chorley, had been appointed.



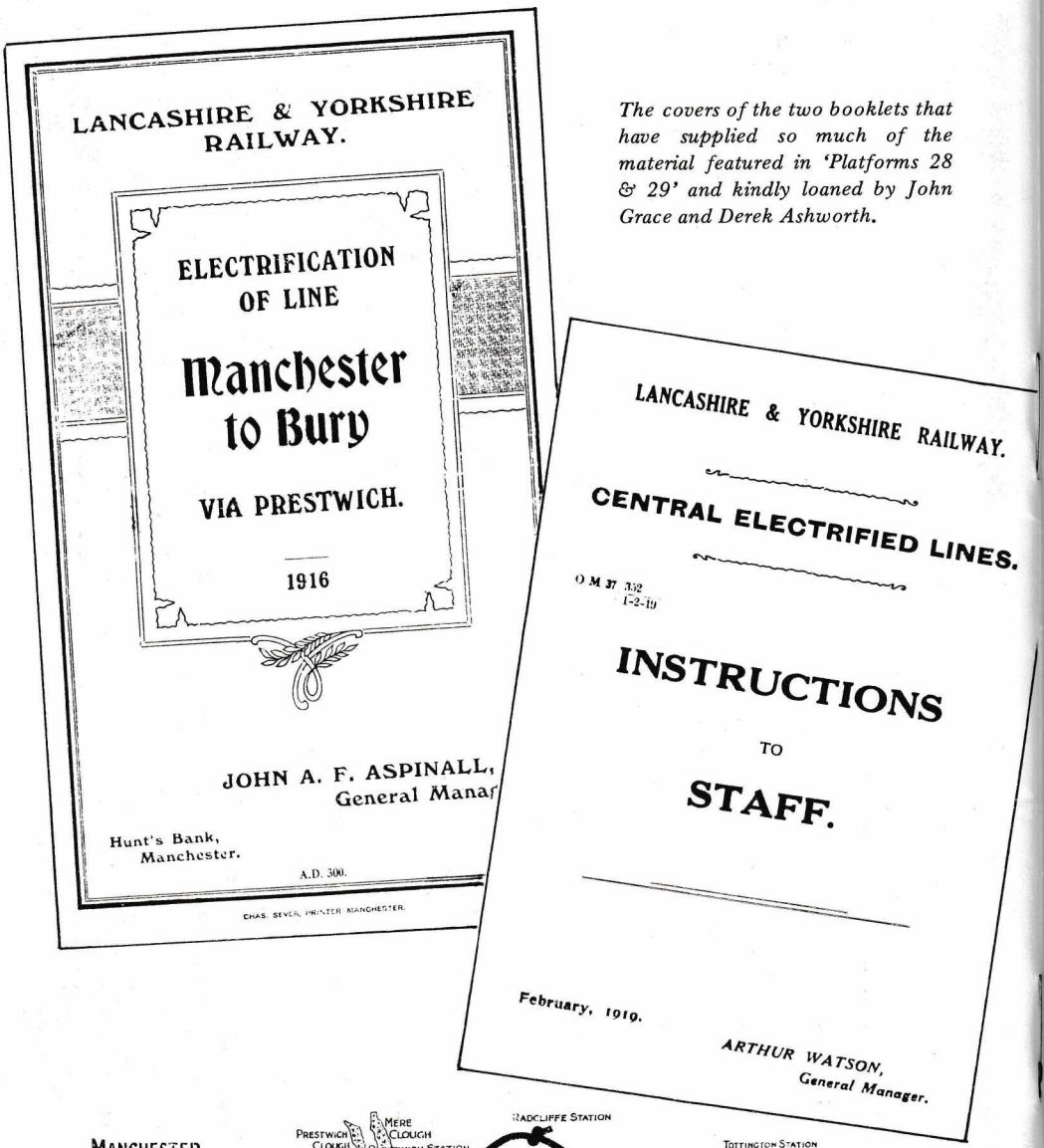
'STUART' was the third engine of the class, built in May 1861 and would have originally looked like 'HOLME' (illustrated on page 10 of 'Platform 26). It appears here in slightly altered condition about 1880. The full cab was added in the seventies as was the number-plate. The green livery would not persist very much longer and the engine was rebuilt with a Barton Wright boiler having Naylor safety valves in 1886. It continued to work, without brakes on the engine, until withdrawal in March 1901 when it and 'HOLME' were the last of the type in existence. Further details of the class can be found in 'Platform 16'.

Of the eleven directors whose names were used on locomotives only four were still on the board in 1872 and of the twenty-two directors of 1861, nine remained in 1872 though by that date the board consisted of sixteen members.

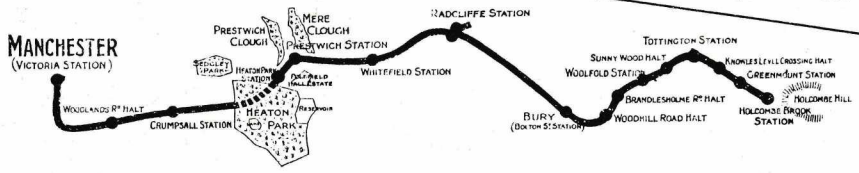
It seems reasonable to assume therefore that the locomotive No.302 was indeed named *Holme* and that through the passage of time, mistakes have crept in with the result that *Hare* has been substituted for *Holme* in the locomotive lists.

	1859	1860	1861	1862	1863	1864	1865	1866	1867	1868	1869	1870	1871	1872
Henry W. Wickham [1]	•	•	•	•	•	•	•	•						
Geo Wilson [2] [3]	•	•	•	•	•	•	•	•	•	•	•	•		
Geo Anderton	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Rich Atkinson	•	•	•	•										
Jas Audus	•	•	•	•	•	•	•	•						
Thos Barnes [6]	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Will Blacklock	•	•	•	•	•	•	•	•	•	?	?	?		
Joe Craven	•	•	•	•	•	•	•	•						
Thos Dugdale [4] [5]	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Will Fenton	•													
Sam'l Fielden	•	•	•	•	•	•	•	•	•	•	•	•	•	•
John Hargreaves	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Jas Hatton	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Jas Holme	•	•	•	•	•	•	•	•	•	?	?	?		
Will Hornby	•	•	•	•	•	•	•	•	•	•	•	•	•	•
John Kay	•	•	•	•	•	•	•	•	•	•	•	•	•	
Will Leaf	•	•	•	•	•									
Will Marshall	•	•	•	•										
Jas Pilkington	•	•	•	•	•	•	•	•	•	•	•	•	•	•
John Rolf	•	•	•											
Jas Riley	•	•	•											
Will Stuart	•	•	•											
Josh Radcliffe		•	•	•	•	•	•	•	•	•	•	•	•	•
Josh Appleyard										?	?	?	•	•
Theo Hare										?	?	?	•	•
Lord Houghton										?	?	?	•	•
B. C. Nicholson										?	?	?	•	•
Geo Wood										?	?	?	•	•
Will Foster														•
Peter Thomson														•
TOTAL	22	22	22	19	17	17	16	16	13	?	?	?	15	16

1 Chairman—1866 2 Deputy-Chairman—1866 3 Chairman—1866-70 4 Deputy Chairman—1868-70 5 Chairman—1870- 6 Deputy-Chairman—1870



The covers of the two booklets that have supplied so much of the material featured in 'Platforms 28 & 29' and kindly loaned by John Grace and Derek Ashworth.



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